



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/606,290	06/25/2003	Eric A. Seymour	AE2002-044	2914
35487	7590	02/07/2005	EXAMINER VERSTEEG, STEVEN H	
BENJAMIN HUDSON, JR. JOHN D. PIRNOT 1625 SHARP POINT DR. FORT COLLINS, CO 80525			ART UNIT 1753	PAPER NUMBER

DATE MAILED: 02/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/606,290

Applicant(s)

SEYMOUR ET AL.

Examiner

Steven H VerSteeg

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 June 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: **32** (pg. 3, line 30) and **34** (pg. 3, line 31). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

2. Claim 7 is objected to because of the following informalities: the acronym "RCL" in line 2 needs expanded. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

Art Unit: 1753

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,814,195 to Lehan et al. (Lehan) in view of US 6,563,076 B1 to Benjamin et al. (Benjamin).

5. For claim 1, Applicant requires a dual magnetron power sputtering apparatus comprising a coating chamber containing at least two target materials; an AC power supply connected to a transformer to supply an AC voltage to the target materials wherein each of the target materials acts as a cathode and alternately as an anode on each half cycle of the AC voltage; a blocking capacitor in series with the output of the transformer and the target materials to prevent the flow of DC current to the target materials; a work piece disposed in close proximity of the target materials wherein the presence of a reactive gas sputtered materials from the target combine with the gas to deposit a thin film on the work piece; and a balancing circuit connected across the output of the transformer wherein the balancing circuit allows the power supply to deliver equal power to each target material.

6. For claim 6, Applicant requires a dual magnetron power sputtering apparatus comprising a coating chamber containing at least two target materials; an AC power supply connected to a transformer to supply an AC voltage to the target materials wherein each of the target materials acts as ac cathode and alternately as an anode on each half cycle of the AC voltage; a work piece disposed in close proximity of the target materials wherein the presence of a reactive gas sputtered materials from the targets combine with the gas to deposit a thin film on the work piece; and a balancing circuit connected in series with the output of the transformer and the target material wherein the balancing circuit allows the power supply to deliver equal power to each target material.

Art Unit: 1753

7. Lehan discloses a dual magnetron power sputtering apparatus (abstract) comprising a coating chamber (Figure 3) with two targets **64** and **65**; an AC power supply **52** connected to a transformer **54** wherein each target acts as an anode and cathode for each half cycle (col. 4, l. 10-16); a blocking capacitor **56** in series with the output of the transformer; a work piece in close proximity **80** and reactive gas supply **70**.

8. Lehan does not disclose the use of a balancing circuit.

9. Benjamin discloses that when AC power is broken up and supplied to two separate items, a balancing circuit is beneficial to use because it ensures that the AC signal is symmetrically loaded about the zero volt axis ensuring that the signal does not generate spurious DC components (col. 4, l. 26-32).

10. It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the invention of Lehan to utilize a balancing circuit as taught by Benjamin because of the desire to ensure that the AC signal is symmetrically loaded.

11. For claim 2, Applicant requires the balancing circuit to be comprised of a series of connected inductor and variable resistor that shunts DC current and prevents DC voltage from being applied to the DC blocking capacitor.

12. For claims 3 and 8, Applicant requires the balancing circuit to cause a deliberate unbalance of power to at least one of the target materials to reduce power to the target thereby compensating for faster erosion of the target.

13. For claim 4, Applicant requires the variable resistor to be implemented as a transistor operated linearly.

Art Unit: 1753

14. For claim 5, Applicant requires the resistor to be implemented as a boost converted to produce a variable resistive output.
15. For claim 7, Applicant requires the balancing circuit to be comprised of a parallel RCL circuit placed in series with the output of the transformer.
16. Figure 3 of Benjamin shows the limitations.

General Information

For general status inquiries on applications not having received a first action on the merits, please contact the Technology Center 1700 receptionist at (571) 272-1700.

For inquiries involving Recovery of lost papers & cases, sending out missing papers, resetting shortened statutory periods, or for restarting the shortened statutory period for response, please contact Denis Boyd at (571) 272-0992.

For general inquiries such as fees, hours of operation, and employee location, please contact the Technology Center 1700 receptionist at (571) 272-1300.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven H VerSteeg whose telephone number is (571) 272-1348. The examiner can normally be reached on Mon - Thurs (6:30 AM - 5:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam X Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1753

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Steven H VerSteeg
Primary Examiner
Art Unit 1753

shv
February 3, 2005